An Alpine Plant Comes Back

by William E. Brumback

Photos by Susi von Oettingen/USFWS

The New England Wild Flower Society, which celebrated its 100th anniversary in 2001, is the oldest plant conservation organization in the country. Although conservation has been part of the Society's heritage from the beginning, several milestones in its history are worth noting.

In the 1980s, the Society helped form the Center for Plant Conservation, becoming one of the original participating institutions in this national plant conservation effort. The Society formalized its own regional conservation efforts in 1990 by initiating the New England Plant Conservation Program, a voluntary collaboration between botanists and private and public agencies established to preserve and recover the rare plants of New England. Through six state task forces, comprised primarily of professional conservationists and academics, the program targets hundreds of rare plants for status updates each year.

It soon became apparent that the task was too great for professionals alone, and the Society instituted the Plant Conservation Volunteers Corps to assist in rare plant surveys, habitat management, invasive plant identification and control, and botanical surveys. In addition, the Society has also received funding to produce Conservation and Research Plans for the 100 rarest plants of the region, and has also initiated herbarium research in over 25 major and minor herbaria to help quantify the status of regionally rare (or potentially rare) plants in New England.

Since 1982, the Society has been involved in the recovery of several listed plant species. One of these plants, Robbins' cinquefoil or dwarf cinquefoil *(Potentilla robbinsiana)*, has been proposed for removal from the federal endangered species list. The plant, an alpine species found only at two locations on the cold slopes of the White Mountains in New Hampshire, grows in perhaps the harshest conditions found anywhere in New England. Not only is the plant able to survive severe cold, but it grows only in areas where phenomenal winds blow the snow cover off the rocky soil. During the winter, temperatures average around 0° F (-18°C), with a record low of –47° F (-44°C), and winds regularly average over 45 miles per hour (72 kilometers per hour), with peak gusts averaging over 150 miles per hour (240 kph) each winter. Its ability to survive without snow cover under these rugged conditions gives it an edge over other species within a relatively small area of habitat.

Besides its choice of habitat, this species has a few other quirks. First, like many other members of the rose family (including apples), it is apomictic. This means that the plants set seed without fertilization; in the case of dwarf cinquefoil, it also means that every seedling is an exact replica of its parent. Second, all the plants are almost genetically identical. Essentially, there is a genetically identical population producing plants that are all genetically identical.

The main threat to this plant was not the weather, but a hiking trail (which also carried horses at one time) running through the middle of the largest population on Mt. Washington. This trail, combined with collection of the plants for herbaria and for sale by nurseries, reduced the species' limited numbers. Through a collaboration of the U.S. Fish and Wildlife Service, the U.S. Forest Service, and the Appalachian Mountain

Club, the trail was eventually relocated, eliminating the major threat to the plants, and the Society instituted a reintroduction/augmentation program.

For the past decade, the Society has received seeds from the Mt. Washington plants collected under federal permit by the Appalachian Mountain Club, the organization that has taken the lead on monitoring the plants in the wild. At our botanic garden, Garden in the Woods in Framingham, Massachusetts, we have successfully produced seedlings by treating the seeds with gibberellic acid before sowing. Sowing seed outside in late fall, subjecting the seeds to ambient temperatures and natural freezing and thawing over winter, also works well. The seeds germinate in May, and the tiny seedlings are left in seed flats for one to two years before repotting in well-drained soil. Because we are growing an alpine species at near sea level with accompanying heat and humidity, mortality of seedlings is relatively high. Those that survive, however, often bloom in their pots in the spring of their third year. These mature blooming plants in our nursery are usually much larger than their counterparts in the wild, which need eight to 12 years of growth to reach blooming size (about the diameter of a quarter) in the harsh conditions of the alpine zone.

Initial transplant efforts involved holding plants in freezers at our botanic garden from the beginning of thaw in Framingham (end of February to mid-March) until just after snowmelt on Mt. Washington, when the plants began to bloom (early June). We had mixed success with this method, and our recent transplants, held in cold frames outside over winter and placed in the wild in mid to late July, have proven more successful, showing nearly complete survival over their first winter in the wild. The mid-summer transplants have another advantage. Because the transplants often have bloomed by the time they are transplanted, they may also be producing seeds. These seeds fall in the immediate area of the transplants and often produce seedlings the next growing season.

There are now over 14,000 of the plants growing on Mt. Washington. Additionally, we were able to introduce more than 150 plants, which have now grown to over 300 individuals, to Franconia Ridge, an area where the plant occurred historically. The objectives outlined in the recovery plan have essentially been met.

Robbins' cinquefoil habitat

For now, Robbins' cinquefoil seems secure, but the insidious threat of global warming could greatly affect this species in the future. Perched in inhospitable (to us) territory on top of an alpine peak, it will probably not be able to migrate northward in response to warmer temperatures.

William E. Brumback is Conservation Director for the New England Wild Flower Society, headquartered in Framingham, Massachusetts. He can be reached at 508/877-7630 ext. 3201 or bbrumback@newfs.org.